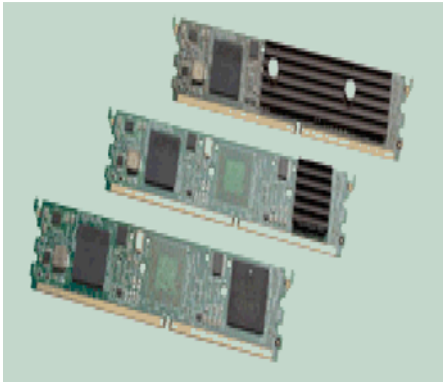
High-Density Packet Voice Digital Signal Processor Module for Cisco Unified Communications

Product Overview

The Cisco® High-Density Packet Voice Digital Signal Processor Module (PVDM3) enables Cisco 2900 and 3900 Series Integrated Services Routers Generation 2 to provide rich-media capabilities such as high-density voice video connectivity, conferencing, transcoding, transrating, and secure voice in Cisco Unified Communications Solutions.

The next-generation high-density packet voice digital signal processor (DSP) modules are available in six densities: PVDM3-16, PVDM3-32, PVDM3-64, PVDM3-128, PVDM3-192, and PVDM3-256, with 16, 32, 64, 128, 192, and 256 channels, respectively (Figure 1). Tables 1 and 2 show the number of voice channels and codecs that each PVDM3 module supports.

Figure 1. PVDM3 Family View



Features and Benefits

The PVDM3s are supported on all Cisco 2900 and 3900 Series platforms. The PVDM3 provides higher density and more processing power than the PVDM2, making the addition of rich-media applications possible. Enhanced DSP architecture accommodates a new packet-processing engine optimized for rich-media voice and video applications, while concurrently supporting the time-division multiplexing IP (TDM-IP) voice framework used by the PVDM2.

Investment Protection and Field-Upgradable Capability

You can now choose a DSP module ranging from 16 to 256 G.711 channels from the PVDM3 module portfolio. The PVDM3 modules all have the same form factor, and are used across Cisco 2900 and 3900 Series Integrated Services Routers. The field-upgradable capability can help you easily scale your voice deployments.

In addition, DSPs on the PVDM3 provide more processing power and memory than the DSPs on the PVDM2. The high performance of PVDM3 supports future voice and video growth with a simple image upgrade to eliminate complete system upgrades. The PVDM3 modules can not only meet your needs today but also anticipate your needs in the future.

Wide Range of CODEC Support

The PVDM3 modules support a wide range of codecs of different complexities. They support all codecs that are supported by the PVDM2 modules. Table 1 lists the codecs supported on the PVDM3 modules.

Table 1. Codec Support on the PVDM3 Modules

Name	Low -Complexity Codecs	Medium-Complexity Codecs	High-Complexity Codecs
PVDM3 module	G.711, ClearChannel, and Fax/Modem Passthrough	G.729a, G.729ab, G.726, G.722, and Fax Relay	G.723.1, G.728, G.729, G.729b, Internet Low Bitrate Codec (iLBC), and Modem Relay

High Density and Flexibility

The PVDM3 module portfolio has up to 4 times higher density than those in the PVDM2 portfolio. In addition, the PVDM3 modules provide better density for medium- and high-complexity codecs than their equivalent PVDM2 peers. For example, the number of supported medium-complexity codecs on a PVDM3-64 is 42, versus 32 on a PVDM2-64. Refer to Table 2 for more details about channel density for each PVDM3 module.

High-end PVDM3 modules such as the PVDM3-192 and PVDM3-256 enable scalable rich-media applications with improved user experience and quality. A PVDM3-256 can support up to 60 secure iLBC TDM-IP voice sessions, and up to 30 eight-party conferences with the high-fidelity wideband codec G.722.

Table 2. Channel Density of PVDM3 Modules

Name	Description	Maximum Number of Channels in Low-Complexity Codecs	Maximum Number of Channels in Medium-Complexity Codecs	Maximum Number of Channels in High-Complexity Codecs
PVDM3-16	16-channel high-density voice and video DSP module	16	12	10
PVDM3-32	32-channel high-density voice and video DSP module	32	21	14
PVDM3-64	64-channel high-density voice and video DSP module	64	42	28
PVDM3-128	128-channel high-density voice and video DSP module	128	96	60
PVDM3-192	192-channel high-density voice and video DSP module	192	138	88
PVDM3-256	256-channel high-density voice and video DSP module	256	192	120

Conferencing, Transcoding, and Transrating Services

The PVDM3 modules support digital voice connections, analog voice connections, conferencing, and universal transcoding services. The same DSPs on the PVDM3 modules can now support all the services with a single DSP image. In addition, the PVDM3 supports a higher number of conference sessions and a higher number of participants per conference than the PVDM2. The PVDM3-256 can support up to 6 conferences with 64 participants in each conference and up to 66 conferences with 8 participants in each conference. Please refer to the PVDM3 Q&A [[(insert URL link here)]] for more information about the number of supported sessions.

In conjunction with Cisco IOS® Software, the PVDM3 modules support universal transcoding and the same codec repacketization as the PVDM2 modules. Universal transcoding allows transcoding from any supported codec to any other supported codec. The PVDM3 modules offer improved universal transcoding session capacity over the PVDM2 modules. Please refer to the PVDM3 Q&A [[(insert URL link here)]] for more details about the number of supported sessions for each codec on each PVDM3 module.

The PVDM3 modules support transrating, where repacketization of the same codec is used to connect dissimilar networks that have different codec packetization periods.

Voice-Quality Management

The PVDM3 modules perform compression, voice-activity-detection, jitter-management, and echo-cancellation functions. The echo cancellation offered in the PVDM3 modules has a tail length of 128 milliseconds (ms) and complies with ITU-T G.168.

Energy-Saving Feature

The PVDM3 DSPs offer multiple power-saving modes, including a power-saver mode when the module is not in use. In power-saver mode each PVDM3 can save up to 5 watts of power.

Cisco Platform Availability

The Cisco High-Density Packet Voice Digital Signal Processor Modules are supported on all Cisco 2900 and 3900 Series platforms. The Cisco 2901 and 2911 have 2 PVDM slots each, the Cisco 2921 and 2951 have 3 PVDM slots each, and the Cisco 3925 and 3945 have 4 PVDM slots each. Please refer to Table 3 for more information about the support matrix.

Table 3. Integrated Services Router Platform Support

Name	Platform Support	Availability	Release
PVDM3-16, PVDM3-32, PVDM3-64, PVDM3-128, PVDM3-192, and PVDM3-256	Cisco 2901, 2911, 2921, 2951, 3925, and 3945 Integrated Service Routers	Unified Communications License on Universal Cisco IOS Software image	Cisco IOS Software Release 15.0(1)M

Note: PVDM3 modules are not supported on the existing Cisco 2800 and 3800 Series Integrated Services Routers.

Product Specifications

Table 4 lists product specifications.

Table 4. Product Specifications

Feature	Specifications
Components	
DSP	Multicore DSP technology
DSP external memory	512-megabit double-data-rate (DDR) synchronous dynamic random access memory (SDRAM) for each DSP
Interface	240-pin dual-inline-memory-module (DIMM) interface
Features	
Echo cancellation	Software echo cancellation compliant with ITU-I G.168, with 128-ms tail coverage
Operating temperature	-5 degress C to 55 degrees C
Voltage	3.3V
Current	1.47A
Power	4.85W
Regulatory and Compliance	
Safety	• Complies with IEC 60950 (worldwide) and AS/NZS 60950-1 (Australia and New Zealand)CAN/CSA-C22.2 No. 60950-1, 1st and 2nd Ed. (Canada) and GB4943-95 (People's Republic of China) • EN60950-1, 1st and 2nd Ed. (CENELEC; includes EU and EFTA) • NOM-019-SCFI-1998 (Mexico), and UL 60950-1, 1st and 2nd Ed. (United States
Homologation	Platform dependent
Mean time between failure (MTBF)	System dependent
EMC	
Emissions	• CISPR22, Class B • EN55022, Class B, CFR47, Part 15, Subpart B, Class B
Harmonics	EN61000-3-2

Feature	Specifications
Flicker	EN61000-3-3
Immunity	• CISPR24 • EN 55024 • EN50082-1
Electrostatic discharge (ESD)	EN 61000-4-2
RF fields	EN 61000-4-3
EFT	EN 61000-4-4
Surge	EN 61000-4-5
Conducted RF	EN 61000-4-6
Power-frequency magnetic fields	EN 6100-4-8
Voltage dips, sags, and interruptions	EN 61000-4-11

Ordering Information

Table 5 presents ordering information.

Table 5. Ordering Information

Description	Part Number
16-channel high-density voice and video DSP module, or spare	PVDM3-16 or PVDM3-16=
32-channel high-density voice and video DSP module, or spare	PVDM3-32 or PVDM3-32=
64-channel high-density voice and video DSP module, or spare	PVDM3-64 or PVDM3-64=
128-channel high-density voice and video DSP module, or spare	PVDM3-128 or PVDM3-128=
192-channel high-density voice and video DSP module, or spare	PVDM3-192 or PVDM3-192=
256-channel high-density voice and video DSP module, or spare	PVDM3-256 or PVDM3-256=

To place an order, visit the Cisco Ordering Home Page. To download software, visit the Cisco Software Center.

Cisco and Partner Services for the Branch

Services from Cisco and our certified partners can help you transform the branch experience and accelerate business innovation and growth in the Borderless Network. We have the depth and breadth of expertise to create a clear, replicable, optimized branch footprint across technologies. Planning and design services align technology with business goals and can increase the accuracy, speed, and efficiency of deployment. Technical services help improve operational efficiency, save money, and mitigate risk. Optimization services are designed to continuously improve performance and help your team succeed with new technologies.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

Printed in USA C78-553971-00 07/09